



MINISTRY OF HOUSING AND
LOCAL GOVERNMENT

Clean Air Act, 1956
Memorandum on
Industrial Provisions



LONDON
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ONE SHILLING NET

CLEAN AIR ACT, 1956

Memorandum on Industrial Provisions

Sections 1, 2, 5-9, 16, 19, 20, and 22 and 35 (parts)

Scope of the Memorandum

1. This Memorandum is designed to assist local authorities in administering the provisions of the Clean Air Act which come into operation on 1st June, 1958—i.e. Sections 1, 2, 5-9, 16, 19, 20 and parts of Sections 22 and 35. It is not intended to be a technical manual, but some references are given in Appendix III to technical publications which may be useful.

2. Generally speaking, the sections of the Act which come into force on 1st June are most likely to affect the users of boilers, other than small domestic boilers, and certain process furnaces, i.e. they are directed primarily to industrial premises, commercial buildings, warehouses, etc. In normal circumstances, they are unlikely to affect the users of small stoves, boilers and open fires in private dwellings which rarely make dark smoke or emit grit or dust.

3. The other provisions of the Clean Air Act affecting industrial and commercial premises—Section 3 (installation of new furnaces), Section 10 (height of chimneys for new buildings) and Section 18 (colliery spoilbanks)—have been in force since the 31st December, 1956 and were described in the Memorandum on Miscellaneous Provisions of the Clean Air Act* issued at the time. No further reference is made to them in this Memorandum.

4. The application of the provisions of the Act to furnaces and processes controlled under the Alkali, &c. Works Regulation Act, 1906, as extended by the Alkali, &c. Works Orders 1928-1958 is limited by virtue of Section 17 of the Clean Air Act. The provisions of this section were also described in the Memorandum on Miscellaneous Provisions.

5. Sections 11-15 (smoke control areas), which have been in force since 31st December, 1956, may in some cases apply to commercial and industrial premises. They were dealt with separately in the Memorandum on Smoke Control Areas* issued in December, 1956.

6. It should be noted that Section 29 of the Act makes it the duty of the local authorities to enforce the provisions of the Act. This is something new. Hitherto, under the Public Health Acts, local authorities have as a rule had power to take action only where nuisance occurred. Now, under the Clean Air Act, specific requirements are laid on the occupiers of buildings, and the local authority will have the more positive task of seeing that those requirements are complied with throughout its district.

Dark Smoke (Sections 1 and 2)

LAW

7. Section 1 of the Act prohibits with certain exceptions the emission of dark smoke from chimneys.

* Published by Her Majesty's Stationery Office, and issued with Circular No. 64/56.

8. *Dark smoke* is defined in Section 34(2) as smoke which, if compared in the appropriate manner with a chart of the type known as the Ringelmann Chart would appear to be as dark as, or darker than shade 2 on the Chart.* It should be noted that it is not necessary to show that there has been actual comparison between the smoke emitted and the shades on the Ringelmann Chart. The emission of dark smoke may be proved in any other way which the Court accepts, e.g. evidence of observation by an inspector experienced in the use of the chart and familiar with the appearance of shade 2 smoke may be offered.

9. *Smoke* is defined in Section 34(1) as including soot, ash, grit and gritty particles emitted in smoke.

10. A *chimney* is defined in Section 34(1) as including structures and openings of any kind from or through which smoke may be emitted, (e.g. louvres in the roofs of buildings). The chimney may be structurally separate from the building which it serves.

11. Dark smoke is also prohibited in the case of chimneys serving outdoor boilers or industrial plant attached to buildings or for the time being fixed or installed on land (e.g. plant of a stationary or semi-permanent character, but not mobile appliances such as road making apparatus) (Section 1(4)). "Industrial plant" is also defined in Section 34(1).

12. Section 1 also applies to railway engines and ships by virtue of Sections 19 and 20.

13. Contravention of Section 1 constitutes a separate offence on each day on which it occurs. It is the occupier of the building or the person having possession of a boiler or industrial plant of the type described in paragraph 11 who is guilty of the offence. A person guilty of an offence under Section 1 is liable on summary conviction to a fine not exceeding £100 (except in the rare case of dark smoke from the chimney of a private dwelling, where the maximum fine is £10. Section 27(1)).

14. If it is proposed to take proceedings, it is important that the requirements of Section 30 regarding notice to the occupier should be observed. Under Section 30(2), failure to give the necessary notice may afford a defence.

15. Local authorities have power under Section 29(2) to take proceedings for an offence under Section 1 in respect of smoke from a chimney outside their district, if it affects any part of their district.

REGULATIONS UNDER SECTION 1(2)

16. The Dark Smoke (Permitted Periods) Regulations, 1958 (S.I. 1958 No. 498) exempt certain emissions of dark smoke which may at times be unavoidable, for example during soot-blowing or fire cleaning. The regulations permit the following :

- (i) Not more than 10 minutes of dark smoke in the aggregate from any chimney in any period of 8 hours, or 14 minutes in 8 hours if soot-blowing is carried out within that period.

* Copies of the chart may be obtained from:—

- (1) The British Standards Institution, Sales Office, 2, Park Street, London, W.1., who have produced a standard chart B.S.2742C, and a British Standard: B.S.2742 "Use of the Ringelmann Chart". Price of the two documents 3/- plus 2/- postage—10 copies or more post free; or
- (2) Messrs. Charles Griffin and Company, Limited, Drury Lane, London, W.C.2.—price 3 charts 2/6, 6 charts 4/-, 12 charts 7/-, post free, with one copy of instructions per order.

- (ii) The 10 and 14 minutes to be extended as follows in the case of chimneys serving more than one furnace:

A chimney serving 2 furnaces—18 & 25 minutes respectively ;

A chimney serving 3 furnaces—24 & 34 minutes respectively ;

A chimney serving 4 or more furnaces—29 & 41 minutes respectively ;

In addition:

- (a) No continuous emission of dark smoke (other than that caused by soot-blowing) shall exceed 4 minutes, and
(b) No emission of black smoke shall exceed 2 minutes in the aggregate in any period of 30 minutes. (Black smoke is smoke as dark as or darker than shade 4 on the Ringelmann Chart.)

It may be noted that where a single boiler or unit contains two or more furnaces, e.g. a Lancashire boiler, the furnaces count as only one unit and the higher exemptions cannot be claimed.

17. For the purpose of the Regulations the local authority will need to know when soot-blowing is carried out. They will have power to enter and inspect premises for this purpose (section 287 of the Public Health Act, 1936, or in London, Third Schedule, Part II, paragraph 3, of the Clean Air Act); but it is understood that many industrial firms keep records of their soot-blowing operations, and arrangements could no doubt be made for the local authority to see them from time to time.

18. There are separate regulations for ships (see paragraph 63).

DEFENCES IN THE CASE OF PROCEEDINGS FOR DISCHARGING DARK SMOKE

19. *Section 1 Defences.* Section 1(3) provides for defences where the emission of dark smoke was solely due (a) to the lighting up of a furnace from cold, (b) to some failure of a furnace or of apparatus, (c) to the use of unsuitable fuel, when suitable fuel was unobtainable. These defences are precisely defined in the Section, to which reference should be made. It should be noted in particular that the word "solely" places an important limitation on those defences; it will be necessary to prove that there were no other causes, except (d) where there was a combination of two or more of these causes.

20. *Section 2 Defence.* Section 2 provides a further defence available for a temporary period of seven years from the passing of the Act, i.e. until the 4th July, 1963, if it can be proved that:—

- (a) the emission of dark smoke was due to the nature of the building or its equipment and not to any failure properly to maintain the building or properly to maintain and use the equipment; *and*
(b) it had not been practicable to alter or equip the building so as to enable it to be used or fully used for the purpose for which it was intended without the likelihood of contraventions of Section 1.

21. The defence contained in Section 2 is not a temporary licence to go on making dark smoke until 1963. It does not, for instance, cover emissions of dark smoke caused by careless or improper use of plant or by poor stoking. It is, however, a recognition that it may not always be possible to prevent the emission of dark smoke until alterations to plant have been carried out. In the second part of the defence the word "practicable" is important. This is defined in Section 34(1) as "reasonably practicable having regard amongst other things to local conditions and circumstances, to the financial implications and to the current state of technical knowledge". As time goes on it is likely to become more difficult to prove that alterations have not been practicable.

22. *Certificates under Section 2.* Section 2(2) of the Act enables a local authority from time to time until 1963 to issue a certificate to the effect that it has not been practicable to alter or equip the building so as to enable it to be used or fully used for the purpose for which it was intended without the likelihood of contraventions of Section 1. While such a certificate is in force it is conclusive evidence for the purposes of paragraph 20(b); but the defendant who seeks to use the Section 2 defence will still need to prove the facts in paragraph 20(a).

23. A certificate may be given for a period of a year from the date of issue or for such shorter period as may be specified. The local authority could therefore limit the certificate to a few months if they thought that adaptations could be completed in that time. Certificates, which expire after one year, can be renewed, but no certificate will remain in force after 4th July, 1963. A certificate may be limited to particular chimneys of a building, e.g. to chimneys serving only those furnaces which require adaptation.

ADMINISTRATION

24. It will be clear from the foregoing that effective administration of Sections 1 and 2 will not merely be a matter of observing and reporting emissions of dark smoke when they occur, but will require a knowledge of the particular buildings which are liable to make dark smoke and of the nature of the plant and operating conditions in each. It will be necessary, for example, to know where two or more furnaces discharge to the same chimney, about practice in regard to soot-blowing and about improvements or modifications to equipment in relation to Section 2.

25. Local authorities will probably find it useful to make systematic surveys of their areas as soon as they can in order to obtain a clear picture of the problems to be overcome. Such a survey will not only provide the necessary information about sources of dark smoke; it will also bring their officers into contact with managements and will simplify their task in the future by enabling them to identify the cases which need attention.

26. The system of certification under Section 2 should help in this connection. If local authorities let it be known that they are prepared to issue certificates in suitable cases there will be opportunities to inspect the existing plant, to assess its condition and to ascertain the extent of any alterations or re-equipment required. Discussion with managements over the granting of a certificate may enable the local authority to influence their programmes of re-equipment and to ensure that the works are undertaken promptly. The limitations of the certificate should, however, be made clear. It applies only to paragraph (b) of the defence. Dark smoke arising from any cause other than the nature of the building or equipment will not be covered.

27. It is to be expected that the number of hand-fired boilers will decline in view of the difficulty of controlling smoke from their furnaces. Frequently the installation of mechanical stokers may assist in reducing smoke. Occasionally gas or electric firing may be the better solution. Where hand firing is to continue, smoke eliminating devices such as those developed by the Fuel Research Station may have to be fixed to the boilers unless smokeless fuel is used. A list of manufacturers of these devices developed by the Fuel Research Station is given at Appendix I. Other manufacturers who are not on this list may produce similar or equally effective equipment for the elimination of smoke. Where a mechanical stoker is to be fitted, local authorities should do their best to ensure that its performance will be sufficiently smokeless to warrant exemption in the event of including the premises in a smoke control area. Firms should be encouraged in appropriate cases to review the

whole of their existing methods of steam raising and steam utilisation, instead of looking solely at the question of avoiding smoke. It may be more economical in the long run to put in a different boiler, rather than to deal simply with the existing firing arrangements.

28. Certainly capital expenditure on alterations to plant or on new equipment is more likely to be acceptable if there are corresponding savings in running costs. The thermal efficiency of boilers can often be increased by reducing smoke emission and the Clean Air Act does, in fact, present industrialists with a new opportunity to save fuel in the process of reducing smoke. Firms who are in any doubt about the best course to follow should be encouraged to employ Fuel Consultants or to approach their industry's research association, if there is one, or to consult the National Industrial Fuel Efficiency Service. A list of their Offices is attached at Appendix II.

29. It may help in appropriate cases to bring to the notice of firms the results of the surveys of 555 Lancashire boilers which was carried out by N.I.F.E.S. in 1956. These are recorded in their Third Annual Report, which shows that the installation of economisers and mechanical stokers should raise the efficiency of a Lancashire boiler to at least 75 per cent of the net calorific value of the coal—a figure much higher than that found at most plants during their survey. In fact the amount of equipment required to bring the average efficiency of all the 555 boilers up to 75 per cent would in many individual cases be quite modest, whilst improved operation would produce substantial savings. N.I.F.E.S. estimated that if recommendations similar to those made in the course of these 555 surveys were applied to all the Lancashire boilers in regular use—about 18,000—which consume about 20 million tons of coal a year, there would be a coal saving of 3 million tons a year for an expenditure of not more than £14 million. At that rate the initial expenditure would be recouped by the saving in fuel costs in about a year. These figures are impressive, and show what may be expected from increased fuel efficiency, with its accompanying reduction in smoke. Firms can be reminded that fuel-saving equipment which is covered by the Income Tax Investment Allowances (Fuel Economy Plant) Order, 1957 (S.I. 1957 No. 938) will qualify for an investment allowance. The type of equipment covered by the Order includes mechanical-firing equipment for solid fuel fired plant, oil-firing equipment, waste heat recovery equipment, feed water treatment plant, and certain control equipment and instruments.

30. Industrial firms may also need to be reminded of the Government Loan Scheme for Fuel-Saving Equipment administered by the Ministry of Power. Loans, which are interest-free for the first two years, are available for any approved fuel-saving scheme, provided it can be shown that there would be a worthwhile saving which could not otherwise be achieved. Firms are expected to apply for loans only if funds cannot be made available from other sources. Where a loan is granted, repayment is spread over an agreed period, depending on the financial savings to be expected and on the type of plant, subject to a maximum of twenty years.

31. The efficient operation of furnaces requires intelligent and trained operators. Local authorities should know of the facilities in their areas for training boiler-men preparatory to the examination for the City and Guilds' Boiler Operators' Certificate. There are courses at technical colleges and N.I.F.E.S. also run a course which enables men to study at home but groups them together at their own plant or one nearby for practical instruction. N.I.F.E.S. also run separate courses on oil-firing. Special training schemes are run by the Central Electricity Generating Board, the National Coal Board, and the Ministry of Health for boilermen employed in the two industries and in hospitals.

32. *Smoke instruments.* The Minister does not propose to make regulations under section 4 of the Act requiring the compulsory installation of smoke measuring instruments at present. Such instruments* can be invaluable aids to smoke prevention; nevertheless the need for instrumentation, and the choice of the most suitable instruments, must depend on the particular conditions in each case. It is thought that, at least until further experience has been gained, these matters can be dealt with better by local initiative than by general regulations. The Minister hopes that local authorities will encourage and recommend the use of instruments, particularly smoke alarms, wherever they believe that they would assist in ensuring a proper standard of smoke control. In the case of plants which are liable to make dark smoke and which are not already equipped with proper instruments, it will of course be in the interests of managements to see that their boiler-house staffs have all the help that these instruments afford in preventing contraventions of the Act.

Grit and Dust (Sections 5-9)

LAW

33. Whereas the underlying principle of the dark smoke provisions of the Act is that the emission of dark smoke is normally avoidable and should be generally prohibited, the grit and dust provisions recognise that complete elimination may not always be practicable and that the measures required will vary according to circumstances.

34. *Requirement that grit and dust from furnaces be minimised.* Section 5 therefore requires the use of any practicable means there may be to minimise the emission of grit and dust from the chimneys of furnaces which burn solid fuel or solid waste. This requirement extends to "ovens", which include any form of retort or container used to subject solid fuel to any heat process. The definitions of "practicable" and "practicable means" in Section 34(1) of the Act are important in this connection and should be noted.

35. Section 5 places the obligation to use any practicable means on the occupier of the building in which the furnace or oven is installed, or on the occupier of the land on which the oven is used; or on the person having possession of the boiler or plant (Section 9).

36. Failure to employ "any practicable means there may be" is an offence, for which the penalty on summary conviction for a first offence is a fine not exceeding £100 (Section 27(4)).

37. Section 5 does not apply to small domestic furnaces, i.e. to those designed solely or mainly for domestic purposes, with a maximum heating capacity of less than 55,000 B.Th.U's per hour (Section 5(2)).

38. Dust nuisances from sources to which sections 5-9 do not apply (e.g. certain open air processes) can still be dealt with under Part III of the Public Health Act, 1936 (particularly Section 92(1)(d)) or the corresponding provisions for London.

39. *New furnaces to be fitted with grit and dust arresting plant.* Section 6 reinforces the general requirement of Section 5 by making it obligatory for all new furnaces, burning pulverised fuel or large quantities of any solid fuel or waste and new ovens for processing solid fuel, to be fitted with efficient grit and dust arresting plant to the satisfaction of the local authority.

* B.S. Specifications for various types of instruments have been issued as follows:—
B.S. 2740 "Simple Smoke Alarms",
B.S. 2741 "Simple Smoke Viewers",
B.S. 2811 "Smoke Density Indicators and Recorders".

40. Section 6(1) prohibits the use of

(i) any furnace which burns

(a) pulverised fuel; or

(b) solid fuel in any other form or solid waste at a rate of one ton an hour or more; and

(ii) any oven used to subject solid fuel to any process involving the application of heat,

unless the furnace or oven is provided with grit and dust arresting plant, which has been approved by the local authority, or installed in accordance with plans and specifications submitted to and approved by the local authority, and *unless* the grit and dust arresting plant is properly maintained and used.

41. Under Section 34(7) all furnaces in the same ownership which discharge to the same chimney are to be taken to be one furnace—e.g. for assessing the rate of fuel consumption for the purpose of Section 6(1)(b).

42. Section 6 does not apply to a furnace or oven which has been installed before 1st June, 1958, or where installation has begun, or where an agreement for purchase or installation has been entered into, before that day. (Section 6(2)). In the case of outdoor boilers or industrial plant which incorporate furnaces, it is the date of installation of the boiler or plant that matters for this purpose (Section 9(b)).

43. It is an offence to use a new furnace or oven to which Section 6 applies without approved grit or dust arresting plant, and the penalty on summary conviction is a fine not exceeding £100. (Section 27(4)).

44. When applications for approval to dust or grit arresting plant are rejected reasons should be given to the applicant.

45. Any person who has applied to the local authority for approval of grit and dust arresting plant, or any person who has an interest in the building or land, or the boiler or the industrial plant, may appeal to the Minister if he is dissatisfied with the local authority's decision on the application. (Section 6(4)). Any approval given by the Minister, i.e. where he allows the appeal, has the same effect as if given by the local authority. (Section 6(5)).

46. Under Section 6(3) the Minister is empowered to direct that any class of application or any individual application for approval of grit and dust arresting plant under Section 6(1) shall be referred to him to deal with instead of the local authority. No such direction has been issued by the Minister; he will however be prepared to consider giving directions in cases where special problems arise.

47. *Measurement of grit and dust from furnaces and ovens.* Section 7 enables the Minister to make Regulations imposing requirements for measuring and recording grit and dust emissions from certain classes of plant. A local authority may then direct individual firms to comply with the Regulations. The classes of furnace and oven are the same as those defined in Section 6. Standard specifications for suitable apparatus, and standard codes of practice are now under consideration by the British Standards Institution. Local authorities will be notified if Regulations are made.

48. *Information about furnaces and fuel consumed.* Local authorities will need to be able to obtain information about the furnaces or ovens operated in their districts and about the fuels or wastes burned or processed there, to decide whether or not the provisions of Sections 6 and 7 apply to the furnace or oven. Accordingly Section 8(1) enables them to serve a written notice requiring the provision of such information. Failure to comply with the

requirements of the notice within the time allowed or the giving of materially false information is an offence for which the penalty on summary conviction is a fine not exceeding £100. (Section 27(4)).

ADMINISTRATION

49. For the purposes of section 5 it will be necessary to consider plants individually, since the measures required to comply with the section will depend on the particular circumstances. Where adequate grit or dust arresting equipment is not already in use, it will be necessary to decide in each case whether or not new or additional equipment is "reasonably practicable" (see the definition in section 34(1)), having regard to the nature and volume of the emission, the environment and the feasibility and cost of installing suitable equipment. The choice of equipment required will be influenced by such factors as the volume and temperature of the gases to be treated, the mass rate of emission, the concentration of the dust burden and the range of particle sizes. Consideration may also have to be given to the cost not only of installing but of operating different types of arrestors, and to the technical difficulties which may result from using one system rather than another—e.g. problems of corrosion or erosion, water supplies etc.

50. All this will require careful examination and it may be necessary to make allowance for any difficulties in obtaining appropriate grit or dust arresting equipment if there is a big demand for it. But the time will be well spent if it results in the installation of efficient equipment which is best suited to its purpose. The important point is that industrialists and others should be aware of their responsibilities under the Act and that they should lose no time in taking steps to meet them.

51. Section 5 is so wide in its application that it may be difficult to know where to start. Unless local authorities are aware of particular types of installation in their district which cause difficulty it is suggested that they should take their cue from section 6 of the Act, and concentrate first on furnaces which burn pulverised fuel or large quantities of other kinds of solid fuel.

52. In dealing with grit and dust arrestment under Section 5 and also with applications for approval of arresting plant under Section 6, local authorities may if they wish approach the National Industrial Fuel Efficiency Service for advice, or they could of course employ the services of a consultant. Where they have set up an advisory panel for the prior approval of furnaces under Section 3, they may find it possible to expand its scope to include proposals for grit and dust arrestors.

53. It is impossible in a non-technical memorandum to describe fully the various types of grit and dust arresting plant and their uses. For general information, however, the principal methods of arrestment now in use are outlined below roughly in ascending order of efficiency and cost. Not all the methods are equally efficient over the whole range of particle sizes, and costs may vary according to circumstances, particularly if ancillary engineering works are required.

(1) *Settlement chambers :*

The duct or flue is enlarged to reduce the gas velocity, so allowing the heavy particles to fall to the bottom of the chamber. Sharp changes in the direction of the gas flow e.g. by the fitting of baffles, help to deflect the dust from the gas stream. Settlement chambers are adequate only for the separation of relatively coarse particles of more than (say) 150 microns.

(2) *Cyclones :*

These may be incorporated in the stack or be installed before the stack. In all cases a whirling motion is given to the gas so that the dust particles are carried in a vortex to the base of the cyclone from which they must be withdrawn through a special valve which does not allow air to be sucked into the system. Cyclone designs have been developed to a high degree of efficiency, and this can be increased by the introduction of water to increase the size of the particles and to wash down the deposited dust from the cyclone walls provided there is no risk of corrosion. Cyclones may be roughly classified as follows:

(a) Simple cyclones

These, working with a pressure drop of 1" water gauge or less, will separate grit above say 76 microns diameter (equivalent to the 200 British Standard Sieve mesh). With a pressure drop of 3" water gauge separation can be achieved down to 40 microns. For finer dust the efficiency of separation drops sharply.

(b) Fan Collectors

The induced draught fan and collector are combined. The dust particles are thrown to the periphery of the stream by the fan and they are skimmed off with a proportion of the gas into a cyclone for separation and collection. Performances are more or less the same as with simple cyclones.

(c) High Efficiency Cyclones

These involve a greater pressure loss—up to 4" water gauge—but they will deal efficiently with particles down to (say) 20 microns diameter.

(d) Multi-cyclones

A number of small cyclones are grouped in parallel and one or more can be used, depending on the boiler load. This tends to give more efficient dust extraction on variable load than a single cyclone.

(e) Multi-cellular Extractors

Working on the same principle as cyclones, a large number of small cells or very small cyclones are arranged in parallel. The cells may be vertical, horizontal or sloping. They can be extremely efficient but are apt to suffer from erosion and clogging difficulties. It is necessary to ensure that the gas is evenly distributed between the many cells.

(3) *Wet Systems (washers or scrubbers)*

There are two main categories:

(a) Water film:

The gases are brought into contact with surfaces covered with a film of water so that the dust particles are retained and discharged in the water.

(b) Water spray:

The gases are sprayed with finely divided water. So-called spray washers are usually a combination of spray and film.

Wet washers require an adequate supply of clean water and proper arrangements for effluent disposal. Under certain conditions corrosion may present a problem. The exhaust gases will be cooled and loaded with water vapour which renders them conspicuous. Simple types are cheaper but do not arrest fine particles. The more

elaborate types (such as the Venturi) are efficient for particle sizes down to 1 micron but are correspondingly expensive both in capital outlay and in operating costs.

In wet systems of extraction the effluent may be discharged into a settling tank and the solids may then be removed by means of a filter. The wash water may either drain to waste or be used again.

(4) *Electrical Precipitators:*

The flue gases are passed at low speed through an electrical field set up between two electrodes, one of which is at high potential (usually negative) and the other earthed. The dust particles are charged and are repelled to the earthed electrode where they lose their charge and fall into a collection hopper.

Electrical precipitators when operated properly are very efficient even for particles of less than 1 micron and they involve little pressure drop. They are, however, very costly. As with cyclones, efficiencies are normally enhanced by wetting; in this case, by wetting the collecting (i.e., earthed) electrodes.

Smoke Nuisance (Section 16)

54. It may be necessary in certain circumstances to limit smoke which is not controlled by Sections 1 and 11, e.g. smoke from burning waste materials in the open, or smoke, other than dark smoke, from industrial chimneys. There are no general criteria for determining whether smoke of these kinds ought to be controlled; this will depend on whether the density or volume of the smoke and the location of the source in each case are such as to cause nuisance.

55. Section 16(1) provides that smoke other than—

- (a) smoke emitted from a private dwelling
- (b) dark smoke emitted from a chimney of a building or from a chimney serving the furnace of a boiler or industrial plant attached to a building or for the time being fixed to or installed on land (see note on Section 1(4): paragraph 11)

shall, if it is a nuisance to the inhabitants of the neighbourhood, be deemed a statutory nuisance for the purposes of Part III of the Public Health Act, 1936, i.e. added to the matters listed in Section 92 of that Act which may be dealt with summarily. [In the case of London, Section 16(1) is applied to the Public Health (London) Act, 1936 by Section 32(4)(a)].

56. Part III of the Public Health Act, 1936, will apply to smoke nuisance under Section 16 with the following modifications:

- (i) Section 109(1) of the Public Health Act, which gives protection to mines and certain industrial processes, will not apply. (Section 16(1)).
- (ii) In the case of smoke emitted from a chimney, it will be a defence to prove that the best practicable means have been employed to prevent the nuisance. (Section 16(1)).
- (iii) In the case of smoke nuisances of a temporary and recurring nature, the local authority may apply to the Court for an order, without serving a preliminary abatement notice (but see paragraph 57 below). (Section 16(2)). [Section 32 (5) in the case of London].
- (iv) Failure to comply with a nuisance order, or contravention of a nuisance order may result in a fine not exceeding £10, and a further £5 for each day on which the offence continues after conviction for such failure or contravention. (Section 16(1)). [Section 32(4)(b) in the case of London].

57. Where a local authority intend to take proceedings they must notify the occupier of the premises in accordance with Section 30.

58. Sections 101 to 106 of the Public Health Act, 1936, which dealt with smoke nuisances, are now replaced by the provisions of the Clean Air Act, and are accordingly repealed by the Fourth Schedule to the Act. Sections 147 to 154 of the Public Health (London) Act, 1936 are likewise repealed.

Railway Engines (Section 19)

59. Section 19 provides that Section 1, which prohibits dark smoke, shall apply to railway locomotive engines as it applies to buildings, references to the occupier of the building being read as references to the owner of the engine. The Section applies to railway engines generally, and not only to those operated by the British Transport Commission. The maximum penalty for an offence under Section 1 is a fine of £100. (Section 27(1)). The exemptions and defences available under Section 1 apply to railway engines, but not that under Section 2.

60. Section 19(2) in addition requires the owner of any railway locomotive engine to use any practicable means there may be for minimising the emission of smoke from the chimney of the engine. If the owner fails to do so and smoke is emitted he is guilty of an offence, the penalty for which is a maximum fine of £100 on first offence. (Section 27(4)). For definition of "practicable" and "practicable means", see Section 34(1).

61. Section 19(3) states that none of the provisions of the Act other than Sections 1 and 19 shall apply to railway engines. Any grit or dust emitted apart from smoke is therefore not subject to the Act. Nor are railway engines subject to smoke control orders.

Ships (Section 20)

LAW

62. Section 20(1) provides that Sections 1 and 2 of the Act shall apply to vessels in the waters defined in Section 20(3), as they apply to buildings—references to the occupier of the building being read as references to the owner, master, or other person in charge of the vessel. References to a furnace include references to an engine of the vessel. The maximum penalty on summary conviction for an offence under Section 1 would be a fine not exceeding £100. (Section 27(1)).

63. The defences available under Section 1(3) and Section 2 apply to vessels. Regulations for vessels have also been made under section 1(2)—The Dark Smoke (Permitted Periods) (Vessels) Regulations, 1958. These permit dark smoke from a chimney of a vessel as follows:—

- | | |
|--|---|
| (1) Emissions from a forced draught oil-fired boiler furnace or an oil engine— | not more than 10 minutes of dark smoke in the aggregate in any period of 2 hours (and not more than 4 minutes' continuous dark smoke except when soot-blowing a water tube boiler). |
| (2) Emissions from a natural draught oil-fired furnace (except in special cases mentioned in (4) below)— | not more than 10 minutes of dark smoke in the aggregate in any period of 1 hour (and not more than 4 minutes' continuous dark smoke except when soot-blowing a water tube boiler). |

- (3) Emissions from a coal-fired boiler furnace—in the case of a vessel not under way (except in the special cases mentioned in (4) below); and in the case of a vessel under way—
- not more than 10 minutes of dark smoke in any period of 1 hour;
- 20 minutes in the aggregate in any period of 1 hour.
- (4) Emissions from a natural draught oil-fired boiler furnace or a coal-fired furnace in certain special cases, viz. a vessel with funnels shortened for the purpose of navigating the Manchester Ship Canal, tugs not under way but preparing to get under way or supplying power to other vessels or shore installations, vessels not under way but using main power for dredging, lifting, pumping or performing some other special operation for which the vessel is designed—
- 20 minutes of dark smoke in the aggregate in any period of 1 hour (and not more than 10 minutes' continuous dark smoke in the case of oil-fired boiler furnaces except when soot-blowing a water tube boiler).
- (5) Emissions from any other source—
- 5 minutes in the aggregate in any period of 1 hour.

In no case may black smoke (Ringelmann shade No. 4) be emitted for more than 3 minutes in the aggregate in any period of 30 minutes.

64. Generally speaking the periods permitted by the Regulations apply in the case of dark smoke whether from main or auxiliary boilers or engines. The periods relate to dark smoke from a chimney but vary according to the source of the emission. In determining whether an emission of dark smoke constitutes an offence, it may be necessary for the local authority to ascertain the source of the smoke and the class of boiler furnace or engine responsible. There is no special allowance for dark smoke caused by soot-blowing but the limits for continuous emissions do not apply to the soot-blowing of water tube boilers.

65. Section 20(3) defines the waters to which Section 20 applies; they include canals and inland waterways, and the waters of ports, harbours etc. within the territorial limits of the United Kingdom. A vessel in waters outside the district of any local authority will be deemed to be within the jurisdiction of the local authority whose district lies nearest to it (Section 20(2)).

66. None of the provisions of the Act other than Sections 1, 2, 20 and 22 apply to smoke, grit or dust from vessels. Vessels are not therefore subject to smoke control orders.

67. Section 20 does not apply to vessels of the Royal Navy or Government ships in the service of the Admiralty while employed for naval purposes. The special procedure for dealing with these ships is contained in Section 22(1) of the Act, which is described in paragraph 77 below. Section 20 does, however, apply to other vessels owned by the Crown—see paragraph 80.

68. Section 31 (4) is particularly relevant to Section 20. It makes it clear that references in the Act to local authorities and their districts include references to port health authorities and their districts, and that in the area of such authorities the powers of other local authorities are excluded.

69. The provisions in earlier public health legislation dealing with smoke nuisances from vessels are repealed by the Fourth Schedule.

Administration

70. A little time will necessarily elapse before the owners and masters of vessels in general will be familiar with the requirements of section 1 of the Act and of the Regulations made thereunder. Initially therefore local authorities will no doubt wish to take such opportunities as they can to explain the requirements to those concerned and enlist their co-operation, rather than insist on strict enforcement. Authorities are asked in particular to respect the position of masters of foreign ships who may be unaware of the new requirements. On the first occasion when a *prima facie* contravention occurs, the position should be explained to them, and a warning given if necessary.

71. If at any time a local authority should decide to take proceedings in respect of a foreign vessel, they should, in addition to giving the notice required by section 30 of the Act, immediately notify the nearest Consular Officer for the country in which the vessel is registered.

72. Much of the foreign-going British tonnage is motor driven and any smoke will come either from oil-fired auxiliary boilers or from auxiliary diesel machinery. Modern ocean-going steamers are exclusively forced draught oil-burning ships and they are unlikely to commit offences under the Act if the boilers are correctly operated. In the coasting and short sea trades, fishing, salvage and towing industries and among inland water craft, there are still many coal-burning vessels which present a dark smoke problem.

73. In determining for the purposes of section 2 whether it is practicable to alter or re-equip a vessel, it should be remembered that the fitting of mechanical stokers for coal-firing or the conversion of natural draught to forced draught may be precluded by lack of suitable equipment or by lack of space. There may also be difficulties in fitting marine boilers with efficient smoke-eliminating devices, though the development of suitable eliminators is now being undertaken by the Fuel Research Station of the Department of Scientific and Industrial Research, in conjunction with the shipping industry. Where a shipping company or the master of a ship approach a local authority for a certificate under section 2, the local authority should, in cases of doubt, consult the appropriate Marine Engineer Surveyor of the Ministry of Transport and Civil Aviation. (A list of their offices is given in Appendix IV.) Local authorities should accept as valid section 2 certificates of other local authorities.

74. Even where the boiler or engine equipment of a vessel is normally capable of complying with Section 1 of the Act, exceptional circumstances may of course arise in which dark or even black smoke for prolonged periods may be unavoidable, e.g. when ships are proceeding against unfavourable winds or tides, or in emergency when maximum power is required to avoid collision, grounding or risk to life. The Regulations do not cover all such contingencies but due allowance should be made for them.

Crown Premises (Section 22)

75. Parts of Section 22 came into operation at the first appointed day. Those parts were discussed in the Memorandum on Miscellaneous Provisions (Paragraphs 34-37). The remainder of the Section, i.e. paragraphs (a), (c) and (d) of subsection (1), and subsections (3) and (5), are relevant to the dark smoke, grit and dust, and smoke nuisance provisions of the Act and come into operation on the second appointed day.

76. The Act has been framed on the basis that the Crown (and the Duchies of Cornwall and Lancaster) should, so far as possible, accept the same obligations and have the same rights as other owners of property. There are two types of case:—

- (1) Where the premises are under the control of a Government Department and occupied for the public service of the Crown or for the purposes of a Government Department—e.g. a Government office, National Health Service hospital or an airfield. In this case the provisions of Section 22(1) apply. These provisions also apply to vessels of the Royal Navy, and to premises occupied by visiting forces (see Section 22(4)).
- (2) Where the Crown has an interest in the premises, but is not the occupier (e.g. houses leased by the Crown Estate Commissioners) the Act as a whole applies to the premises. (Section 22(2)).

77. In the case of the premises dealt with by (1) above, the local authority may where they think fit, report to the responsible Minister:—

- (a) emissions of dark smoke, grit or dust ;
- (b) emissions of smoke within a smoke control area ;
- (c) emissions of smoke, whether dark or not, which appear to constitute a nuisance to the inhabitants of the neighbourhood.

In the case of naval vessels, any emissions of dark smoke which appear to the local authority to constitute a nuisance to the inhabitants of the neighbourhood should be reported to the First Lord of the Admiralty.

78. On receiving such a report, the responsible Minister must inquire into the circumstances, and if his inquiry shows that there is cause for complaint, he must employ all practicable means for preventing or minimising the emission of the smoke, grit or dust, or for abating the nuisance and preventing its recurrence. Where premises occupied by a visiting force are concerned the report should be made to the Government Department responsible for the occupation of the premises, e.g. Admiralty, War Office, or Air Ministry.

79. In the case of premises mentioned in (2) of paragraph 76 where the Crown is not the occupier of the premises—the tenant or sub-tenant of the Crown as an occupier will be liable to penalties for smoke offences.

80. Section 22(3) applies Section 20 to ships owned by the Crown (with the exception of those vessels mentioned in Section 22(1)(d), which are dealt with by the special procedure described in paragraph 77). These ships must not therefore emit dark smoke, except as permitted under Section 1. References in Section 20 to the owner, and the master of the vessel, are to be read as references to the master of the vessel, i.e. the Crown as the owner cannot be prosecuted.

81. The term "Government Ship" used in Section 22 has the same meaning as in Section 80 of the Merchant Shipping Act, 1906. (Section 22(5)).

Miscellaneous (Sections 26, 28)

82. Attention is drawn to Section 26, which makes it an offence except in certain circumstances to disclose information relating to any manufacturing process or trade secret which has been supplied or obtained for the purposes of the Act.

83. Attention is also drawn to Section 28 which empowers the County Court to settle questions between landlords and tenants about responsibility for carrying out works to buildings to avoid contravening the Act, and about payment for those works.

Repeals and Transitional Provisions (Section 35)

84. The repeals made by Sections 35(1) and 35(2) and listed in the Fourth Schedule to the Act so far as they relate to England and Wales are effective from 1st June, 1958,—with the exception of the Public Health (Coal Mine Refuse) Act, 1939, which was repealed at the first appointed day (31st December, 1956). Sections 35(3) and 35(4) have been in force since the first appointed day.

APPENDIX I

List of Makers of Smoke Eliminator Fire-doors as designed at the Fuel Research Station

For natural-draught and forced-draught shell-type boilers

Lynward Engineering Co. Ltd., 180, Brompton Road, London, S.W.3.

For natural-draught shell-type boilers

Marine Castings & Supply Co. Ltd., 91, Bishopsgate, London, E.C.2.

John Thompson (Wolverhampton) Ltd., Boilermakers, Wolverhampton.

Cleveland Meters Ltd., Trunk Road Engineering Works, Redcar, Yorks.

General Trade Clearings Ltd., 82-90, Seymour Place, London, W.1.

Westmount Engineers, 60 Westmount Road, Eltham, London, S.E.9.

<i>Port</i>	<i>Address</i>	<i>Telephone Number</i>
Sunderland	Tatham Street, Borough Road, Sunderland, Co. Durham.	Sunderland 2208
Middlesbrough	Commercial Buildings, Wilson Street, Middlesbrough, Yorkshire.	Middlesbrough 4034
Hull	Victoria Chambers, Trinity House Yard, Hull.	Hull 36813
Grimsby	Murray Street Fish Docks, Grimsby, Lincolnshire.	Grimsby 3969
Great Yarmouth	32, King Street, Great Yarmouth, Norfolk.	Great Yarmouth 2754
London	Walsingham House, 35, Seething Lane, London, E.C.3.	ROYal 8081
Southampton	Canute Road, Southampton.	Southampton 23061
Plymouth	14, Union Street, Plymouth, Devon.	Plymouth 66211
Falmouth	Imperial Buildings, Bar Road, Falmouth, Cornwall.	Falmouth 761
Bristol	52, Prince Street, Bristol, 1.	Bristol 26571
Cardiff	Bute Place, Cardiff.	Cardiff 29556
Swansea	Pier Street, Swansea.	Swansea 53710
Liverpool	225, Royal Liver Buildings, Liverpool, 3.	Liverpool Central 6901
Fleetwood	9, Fish Trades Buildings, Wyre Dock, Fleetwood, Lancashire.	Fleetwood 8338
Barrow	Government Buildings, Michaelson Road, Barrow-in-Furness, Lancashire.	Barrow 380

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CLEAN AIR ACT, 1956

MEMORANDUM ON INDUSTRIAL PROVISIONS

Erratum

Page 6, paragraph 27, end of line 2 and line 3 should read :—

“Frequently the installation of mechanical stokers or conversion to oil firing will assist in reducing smoke.”

Ministry of Housing and Local Government
May, 1958.

LONDON: HER MAJESTY'S STATIONERY OFFICE: 1958

(8330) Wt. 2110—1360 12m 5/58 A.O.St.